

Activity 5

Environmental Impacts and Energy Consumption

Think About It

Date

Page R43

Page #

- How does acid rain affect the environment?
- What can be done to reduce the amount of sulfur dioxide and nitrogen oxides released into the atmosphere?



WHAT DO YOU THINK?

Activity 5

Investigate

Pages R44-45

Date

Page #

1a. What part of the country has the most acidic rainwater?

1b. How does the pattern of rainwater pH relate to locations of coal-producing regions and coal-fired power plants?

1c. What parts of the U.S. have the least acidic rainwater? Explain.

1d. What can you infer about the direction in which wind and weather move across the U.S.?

Activity 5

Digging Deeper

Pages R45-50

Date

Page #

Carbon dioxide gas
(CO₂)

is created when a fossil fuel is
burned and its carbon combines
with oxygen

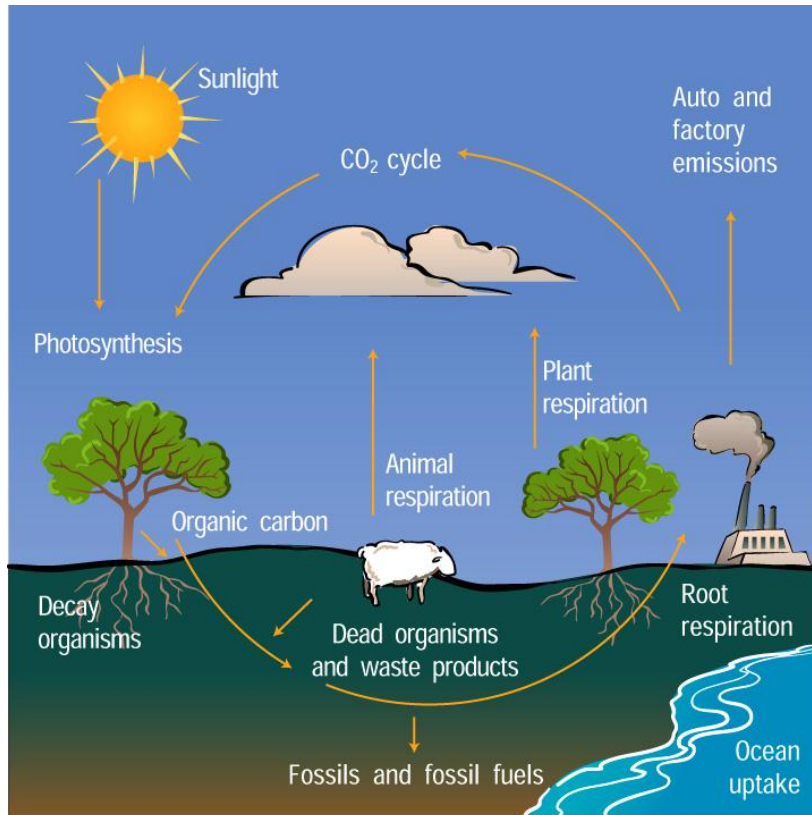
Fossil fuels

supply 84% of energy used in the
U.S.

Burning fossil fuels releases 98%
of the carbon dioxide in the U.S.

Carbon cycle

a diagram that shows the global
movement of carbon



<http://www.brainpop.com/science/earthsystem/carboncycle/>

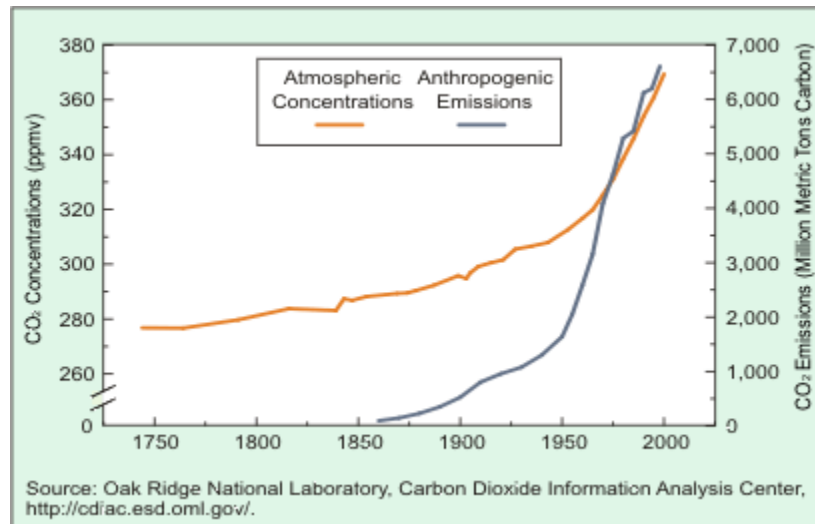
Anthropogenic

created or produced by human activities

Carbon dioxide levels

in the atmosphere have increased by about 25% in the last 150 years

Scientists believe that human activity has caused the largely due to the burning of fossil fuels and deforestation



Greenhouse gases

gases in the Earth's atmosphere that trap heat from the sun and radiate it back to Earth

CO₂ is a greenhouse gas

Some scientists believe the fast addition of CO₂ to the atmosphere

is causing the climate around the world to become warmer

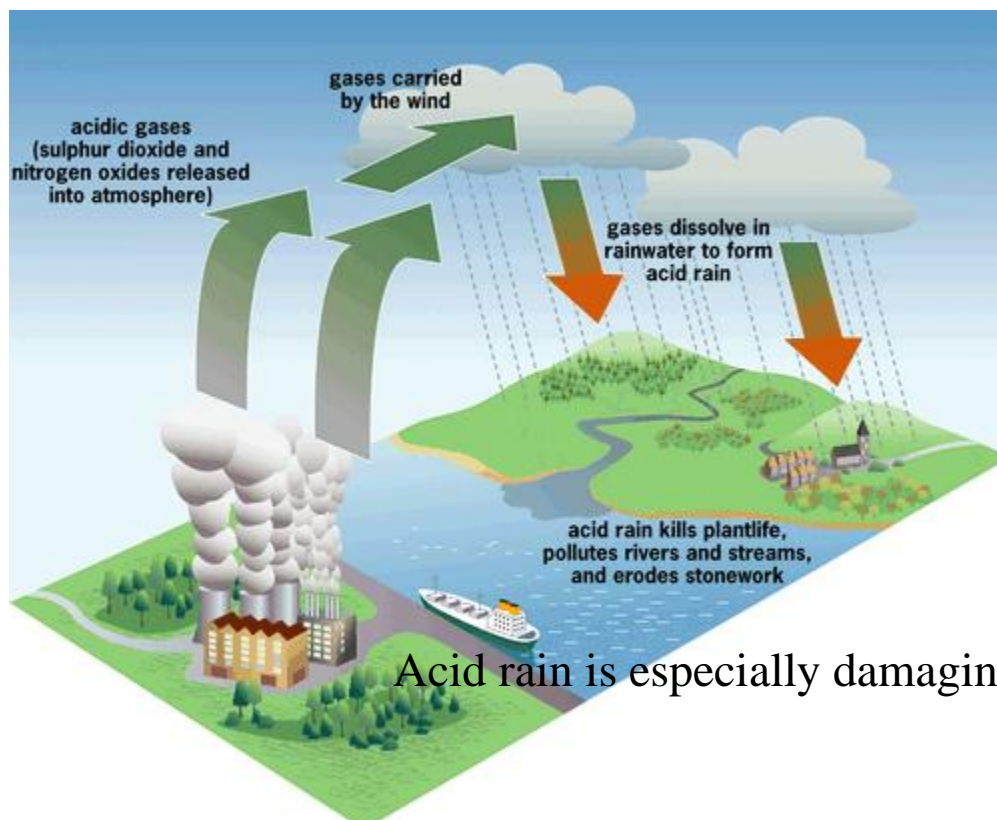
<http://www.brainpop.com/science/earthsystem/greenhouseeffect/>

Acid rain

is created when coal is burned and forms sulfur dioxide (SO_2) gas

The sulfur dioxide then mixes with water in the atmosphere to form sulfuric acid

When sulfuric acid falls to the Earth's surface with rain, it creates acid rain



Acid rain is especially damaging to lakes because

<http://www.absorblearning.com/media/item.action?quick=vd>

http://www.youtube.com/watch?v=HE6Y0iEuXMQ&safety_mode=true&persist_safety_mode=1

Acid rain

damages lakes

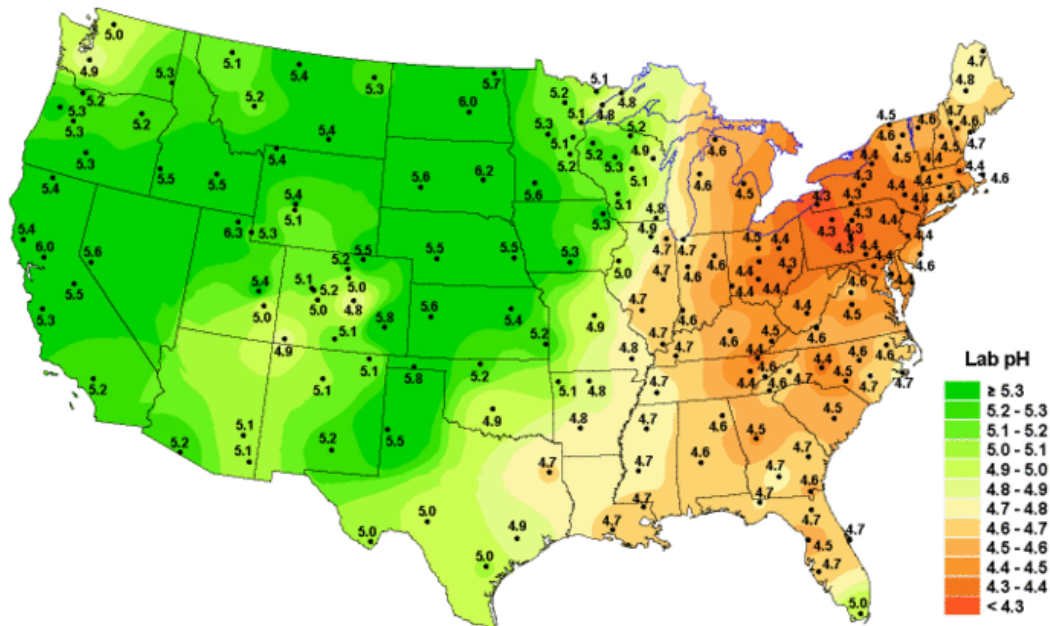
It kills fish, insects and aquatic plants

Eastern U.S.

acid rain is a serious problem here:

There are several coal-burning power plants in Midwest states like Ohio, Michigan and Illinois

Winds blow across the United States from west to east, bringing the sulfuric acid Northeast, where it mixes with rain to create acid rain



Advantages of
energy resources

1. allow us to live a good quality of life
2. provide jobs for many people

Disadvantages of
energy resources

1. burning fossil fuels has decreased air quality
2. acid rain
3. global warming
4. ground-water pollution
5. expensive for households

Activity 5

Check Your Understanding

Date

Page R50

Page #

1. Give two reasons why carbon dioxide levels in the atmosphere have increased.
2. How does acid rain form?
3. How do greenhouse gases contribute to global warming?
4. Why is acid rain a greater problem in the Northeast than elsewhere in the U.S.?